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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/923,242	08/03/2001	Arne Husth	042933/304258	9112

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EXAMINER	
WANG, TED M	

ART UNIT	PAPER NUMBER
2611	

MAIL DATE	DELIVERY MODE
10/17/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/923,242	HUSTH, ARNE	
	Examiner	Art Unit	
	Ted M. Wang	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 August 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,8-12 and 14-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-5,8-10,12 and 14-16* is/are allowed.

6)☒ Claim(s) *17-20* is/are rejected.

7)☒ Claim(s) *11* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments and amendments, filed on 8/9/2007, with respect to the rejection(s) of claim(s) 1-5, 8-12, 14 and 15 under 35 USC 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn.

2. Applicant's arguments with respect to claims 17-20 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

3. Claim 11 is objected to because of the following informalities:

- Claim 11, line 1, change "which" to --- stored in a computer readable medium executable by a computer ---.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 18 and 20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to

one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

- With regard claims 18 and 20, the limitation of "wherein the high pass filter characteristic is caused by at least one analog DC cancellation circuit." as recited has not been taught by the originally filed specification. The specification teaches "In the example described above, the receiver hardware is found to exhibit a high pass filter characteristic." as recited in page 6, lines 22-23, only. There is no teaching for "wherein the high pass filter characteristic is caused by at least one analog DC cancellation circuit".

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindquist et al. (US 5,579,347) in view of Dehghn (US 6,275,087) and the admitted prior art of the instant application.

- With regard claims 17 and 19, Lindquist et al. discloses a digitally compensated direct conversion receiver (Fig.1b) having an effective characteristic (Fig.2a and column 5 lines 16-22) comprising:

determining the modulation extremes of a received modulated signal (column 8 lines 1-12 and column 8 line 38 – column 9 line 20, where $y_I(t)$ is the value of a sample taken at time t (Fig.2 Total Received Signal) that is determined by the receiver and being used to calculate the amplitude "r" of the input signal and the second-order interfering product including DC. Since $y_I(t)$ is continuous function, it is inherent that $y_I(t)$ includes the modulated extremes points (i.e. maximum extreme and minimum extreme).);

determining a DC offset for the signal from the modulation extremes (column 8 line 64 – column 9 line 9, where p_2 is the second order product (or DC offset as described in equation 3 with V_m constant) that based on the modulated extreme.); and processing the signal to compensate for the offset (Fig.6 element 608 and column 9 lines 21-31).

Lindquist et al. discloses all of the subject matter as described in the above paragraph except for specifically teaching (a) applying an inverse filter characteristic to a received modulated signal to compensate for the effect of the effective filter characteristic and (b) the effective filter characteristic is a high pass filter characteristic.

With regard to (a), Dehghn teaches applying an inverse filter characteristic to a received modulated signal to compensate for the effect of the effective filter characteristic (column 1 lines 37-39) in order to compensate the DC error (column 1 lines 38-39) so that the recovered signal quality is improved.

Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the inverse filter as taught by Dehghn into Lindquist's DSP processing between step START and step 502 so as to compensate the DC error and improve the recovered signal quality.

Lindquist et al. and Dehghn disclose all of the subject matter as described in the above paragraph except for specifically teaching (b) the effective filter characteristic is a high pass filter characteristic.

However, the admitted prior art of the instant application teaches a DC cancellation circuit (DCN) designed as high pass filters (page 1 line 29), in which capacitors can be rapidly charged/discharged during the DCN period by electronic switching circuits, to obtain a subtraction of the DC offset in each I or Q channel (page 1 lines 29-31) so that the direct conversion radio receiver performance can be improved. Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the DCN that designed as high pass filter as taught by the admitted prior art of the instant application into Lindquist et al. and Dehghns' DC compensation circuit along with the features as described in the above paragraph so as to improve the direct conversion radio receiver performance.

Allowable Subject Matter

8. Claims 1-5, 8-10, 12 and 14-16 are allowed.

9. Claim 11 would be allowable if rewritten to overcome the objection(s) set forth in this Office action.

10. The following is an examiner's statement of reasons for allowance.

- The prior art fails to teach an apparatus of Claims 1, 12, 14 and 15 that specifically comprises the following:

  -- The instant application is deemed to be directed to a non-obvious improvement over the admitted prior art of the instant application and the invention patented in Pat. No. US 5,579,347, US 6,275,087, US 5,835,538. The improvement comprises that applying an inverse filter characteristic to a received modulated signal over a predetermined number of samples to compensate for the effect of the effective filter characteristic; and determining the modulation extremes of the filtered signal by determining minimum and maximum signal amplitudes over the predetermined number of samples." as recited in combination with other limitation as claimed in claims 1, 12, 14 and 15, respectively.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

12. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted M. Wang whose telephone number is 571-272-3053. The examiner can normally be reached on M-F, 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ted M Wang
Examiner
Art Unit 2611

Ted M. Wang